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Providing appropriate situation awareness within a mixed-initiative control s

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Abstract

The future of air combat relies on humans controlling large teams of unmanned combat air vehicles (UCAVs) within a dynamic environment. Under the DARPA Mixed Initiative Control of Automata (MICA) program, we have been challenged to design a system that empowers a human operator to control teams of up to thirty UCAVs. To address these challenges we are designing an abstracted interaction system that defines and provides adequate situation and automation awareness without overloading human operators to the point where performance degrades gracefully. The proposed mixed initiative system is situated within a complex and highly dynamic environment that could easily overload the multi-tasking human operators. Dozens of system parameters could be updated thousands of times per second during a typical mission so it is neither feasible nor prudent for human operators to maintain complete situation and automation awareness. The proposed abstracted interaction system will provide appropriately abstracted situation awareness and notification capability that includes: general monitoring and automation awareness; task specific information requirements; and user initiated information requests. The system will define adequate situation awareness as a function of mission phase, human operator role, and abstracted information requirements for each task assigned to a specific UCAV.

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